

## CLAIMS

1. An optoelectronic process for the inspection of an area of revolution (T) of a receptacle (3) presenting an axis of revolution (X), where the process includes the following stages:

- illumination of the surface to be inspected (T) using a lighting system (5) presenting an axis of revolution that is located in the extension of the axis of revolution (X) of the receptacle, and that includes at least three given radiation spectra,

- formation of an image (I) of the surface to be inspected using a camera (7),

- and analysis of the image formed with a view to checking the characteristics of the surface to be inspected,

characterised in that it consists of:

- illuminating at least three angular sectors (S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>), each emitting a given radiation spectrum that is separate from all the spectra of the other sectors,

- and forming an image for each angular sector of the surface to be inspected sectors (T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>) by selecting only the light rays returned by the surface to be inspected and presenting one of the said given radiation spectra, so as to eliminate the parasitic light rays whose radiation spectrum does not correspond to that selected for the said angular sector.

2. A process according to claim 1, characterised in that it consists of forming an image for each angular sector sectors (T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>) of the surface to be inspected (T), by selecting only the light rays returned by the surface and coming from an angular sector (S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>) of the lighting system located on the same side as the said angular sector of

the surface to be inspected in relation to the axis of revolution (X).

3. A process according to claim 1, characterised in that it consists of forming an image for each angular sector sectors ( $T_1$ ,  $T_2$ ,  $T_3$ ) of the surface to be inspected (T) by selecting only the light rays returned by the surface and coming from an angular sector ( $S_1$ ,  $S_2$ ,  $S_3$ ) of the lighting system located on the opposite side of the said angular sector sectors ( $T_1$ ,  $T_2$ ,  $T_3$ ) in relation to the axis of revolution (X).

4. A process according to claim 1, characterised in that it consists of illuminating the surface to be inspected (T) in angular sectors of equal value.

5. A process according to claim 1, characterised in that it consists of illuminating by means of radiation spectra that are each of a given colour.

6. A process according to claim 1, characterised in that it consists of analysing the image formed in order to determine the flashing or surface faults of the finish of a receptacle.

7. An optoelectronic device for inspection of an area of revolution (T) of a receptacle (3) presenting an axis of revolution (X), where the device includes:

- a lighting system (5) presenting an axis of revolution located in the extension of the axis of revolution (X) of the receptacle, and that includes at least three given radiation spectra,

- and a system (6) to form an image (I) of the surface to be inspected, that includes a camera (7) and resources (9)

for analysis of the image with a view to checking the characteristics of the surface to be inspected,

characterised in that:

- the lighting system (5) has a lighting surface (S) divided into at least three angular sectors ( $S_1$ ,  $S_2$ ,  $S_3$ ), each emitting a given radiation spectrum and separate from all the spectra of the other sectors,

- the image formation system (6) forms an image for each angular sector ( $T_1$ ,  $T_2$ ,  $T_3$ ) of the surface to be inspected by selecting only the light rays returned by the surface and presenting one of the said given radiation spectra, so as to eliminate the parasitic light rays whose radiation spectrum does not correspond to that selected for the said angular sector.

8. A device according to claim 7, characterised in that the image formation system (6) forms an image for each angular sector sectors ( $T_1$ ,  $T_2$ ,  $T_3$ ) of the surface to be inspected by selecting only the light rays returned by the surface and coming from an angular sector ( $S_1$ ,  $S_2$ ,  $S_3$ ) of the lighting system located on the same side as the said angular sector of the surface to be inspected in relation to the axis of revolution (X).

9. A device according to claim 7, characterised in that the image formation system (6) forms an image for each angular sector sectors ( $T_1$ ,  $T_2$ ,  $T_3$ ) of the surface to be inspected by selecting only the light rays returned by the surface and coming from an angular sector ( $S_1$ ,  $S_2$ ,  $S_3$ ) of the lighting system located on the opposite side of the said angular sector of the surface to be inspected in relation to the axis of revolution (X).

10. A device according to claim 7, characterised in that the lighting system (5) includes an annular source (13) that presents all of the given radiation spectra, and a series of at least three filters (14<sub>1</sub>, 14<sub>2</sub>, 14<sub>3</sub>) placed between the annular source (13) and the surface to be inspected (T), each lying on an angular sector (S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>), and each filter presenting a given transmission spectrum separate from that of the other filters.

11. A device according to claim 8, characterised in that the lighting system (5) includes a series of elementary light sources (10), such as electroluminescent diodes, divided over at least three angular sectors (S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>) and emitting a light spectrum that is different for each angular sector.

12. A device according to claim 7, characterised in that the image formation system (6) includes a series of at least three filters (15<sub>1</sub>, 15<sub>2</sub>, 15<sub>3</sub>) interposed between the camera (7) and the surface to be inspected (T), each lying on an angular sector (U<sub>1</sub>, U<sub>2</sub>, U<sub>3</sub>) and each filter presenting a given transmission spectrum separate from that of the other filters.

13. A device according to claim 7, characterised in that the image formation system (6) includes resources for processing the signals delivered by a colour camera (7) so as to obtain, for each angular sector of the surface to be inspected (T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>), a signal that is representative of a given radiation spectrum.